

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Shinya TAMURA et al.

Serial No.: New Application

Group Art Unit: Unassigned

Filed: March 7, 2002

Examiner: Unassigned

For: LINEAR MOTOR

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination of the above-identified application,
please enter the following specification changes as noted below:

IN THE CLAIMS:

Please amend claims 9-12 and 17 as follows:

9. (Amended) The linear motor according to claim 5,
wherein the magnets are divided into a plurality of parts to be
fixed on the inner peripheral surface of the hollow portion.

10. (Amended) The linear motor according to claim 5, wherein the magnet is shaped like a plate, and the inside yoke is shaped like a hexagonal or octagonal prism.

11. (Amended) The linear motor according to claim 5, wherein the outside yoke is configured by laminating electrical sheets.

12. (Amended) The linear motor according to claim 5, wherein the outside yoke is divided into two parts along the radial direction.

17. (Amended) An X - Y table provided with a linear motor according to claim 1.

Serial No. New Application

REMARKS

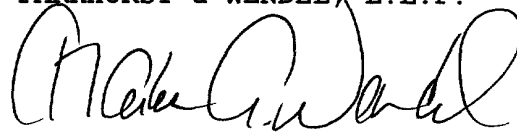
Claims 1-17, as amended, remain herein. Claims 9-12 and 17 have been amended hereby.

This Preliminary Amendment is submitted to eliminate multiply dependent claims from the above-identified application.

Examination of this application on its merits is respectfully requested.

Respectfully submitted,

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March 7, 2002
Date

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Attachments: Claim Mark-ups

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as to cover nearly all surface of the inner peripheral surface of the hollow portion; and

a movable unit comprising a column-shaped inside yoke and coils separately wound in two sections around the outer periphery portion of the inside yoke, wherein

the movable units are arranged side by side, four fixed units are mounted to face the coils of four sections such that the inner peripheral surfaces of the magnets adjacent to each other may be of different magnetic poles, and opposite ends of the movable units are coupled by coupling blocks, the outside yokes of two sets of the fixed units arranged side by side are face-joined to each other, and

the motor further comprises,

holding means for coupling between two face-joined movable units and keeping a constant spacing of one movable stroke between them, and

guide mechanisms, provided between the side of the coupling blocks and the outside yokes, for holding nearly uniform gaps between the outer periphery portions of the coils and the inner peripheral surfaces of the magnets.

9. The linear motor according to claim 5 ~~any one of claims 5 to 8~~, wherein the magnets are divided into a plurality of parts to be fixed on the inner peripheral surface of the hollow portion.

10. The linear motor according to claim 5 ~~any one of claims 5 to 8~~, wherein the magnet is shaped like a plate, and the inside yoke is shaped like a hexagonal or octagonal prism.

11. The linear motor according to claim 5 ~~any one of~~
~~claims 5 to 8~~, wherein the outside yoke is configured by
laminating electrical sheets.

12. The linear motor according to claim 5 ~~any one of~~
~~claims 5 to 8~~, wherein the outside yoke is divided into
two parts along the radial direction.

13. ~~A linear motor, comprising:~~

~~an outside yoke having a plurality of cylindrical
hollow portions extending side by side with each other;~~

~~a plurality of column-shaped inside yokes passing
through the hollow portions of the outside yoke;~~

~~coils wound around the inside yokes along an axial
direction thereof; and~~

~~magnets mounted to the inside of the hollow portions
of the outside yoke and magnetized to a single pole in
surfaces facing the coils,
wherein~~

~~opposite ends of the inside yokes are coupled by
auxiliary yokes, the magnets provided in the hollow
portions adjacent to each other are arranged such that
the inner peripheral surfaces of the magnets may be of
different magnetic poles, thus forming a closed magnetic
path by the inside yokes, the auxiliary yokes, the
outside yokes, and the magnets, and~~

~~by feeding current through the coils, the outside
yokes and the inside yokes are effected to move relative
to each other based on magnetic action caused to occur
between a magnetic field generated by the closed magnetic
path and the coils.~~

outside yokes having cylindrical hollow portions into which the inside yokes are inserted, and having coils wound on the insides of the hollow portions corresponding to the magnets separately provided in the plurality of sections, wherein

the magnets are magnetized to a single pole in surfaces thereof facing the coils, and are configured such that the magnets of the voice coil-type linear motor units adjacent to each other may be of magnetic poles different from each other,

a closed magnetic path is formed by the outside yokes, the inside yokes, and the magnets, and

by feeding current through the coils, the outside yokes coupled and the inside yokes coupled are effected to move relative to each other based on magnetic action caused to occur between a magnetic field generated by the closed magnetic path and a magnetic field generated by the coils.

17. An X - Y table provided with a linear motor according to claim 1 ~~any one of claims 1 to 8 and claims 13 to 16.~~